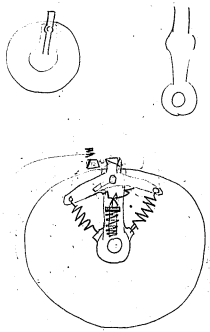
Notebook, N-89-08-15

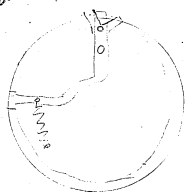
This notebook covers the period August 1889-January 1890. There is also one entry from February 1891. Most of the book consists of notes and drawings by Charles Batchelor and by an unidentified experimenter regarding electric railways. Included also are drawings by Batchelor of ore separators and calculations by Batchelor and James W. Gladstone of the cost of battery manufacturing. The spine is labeled "95." The pages are unnumbered. Approximately 70 pages have been used.

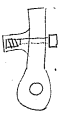
XE-172 N-89-08-15

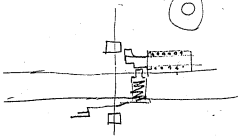
Electric Brake for Freight Cars Aug. 15 1889



Electric Brake for Freight Cars Aug 15 1889

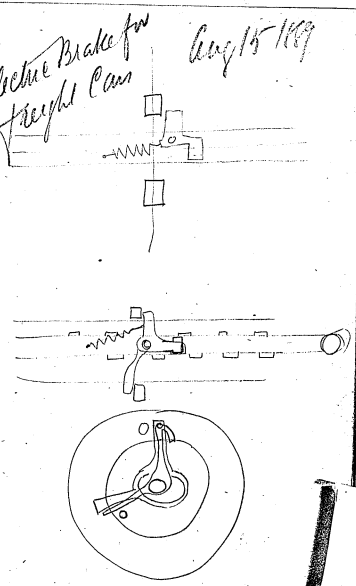






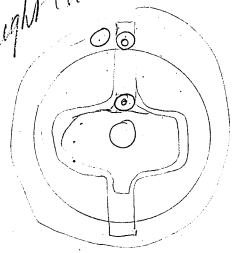
Electric Brake for freight Car

Aug 15 1909

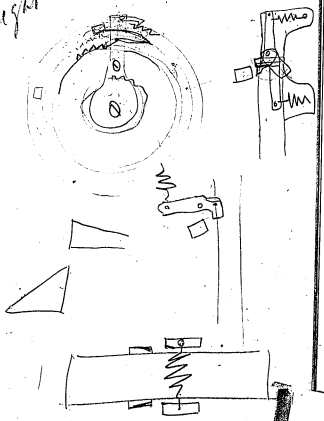


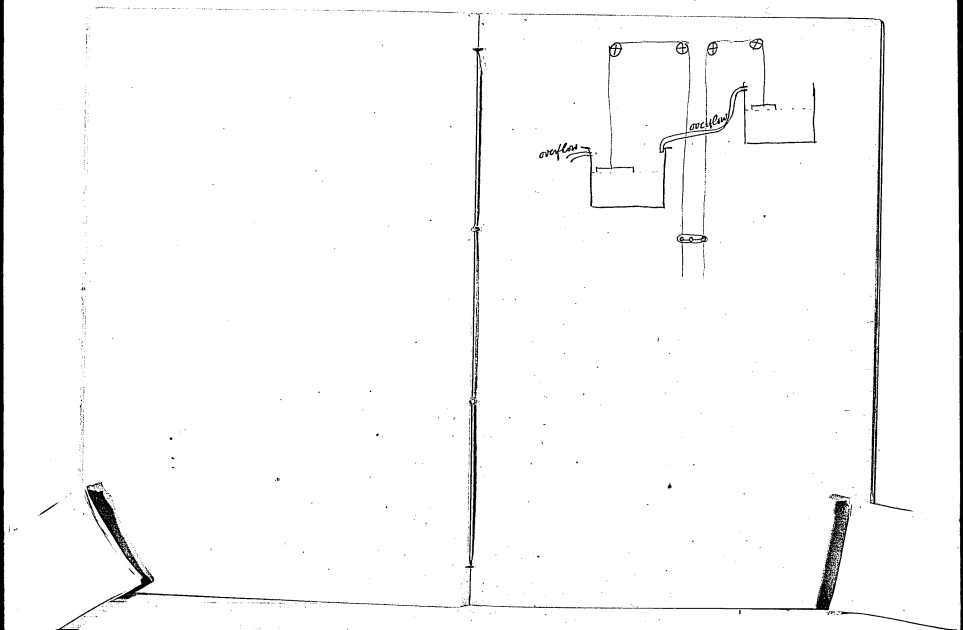
Electric Brake for Freight Cars

Aug 15 1889



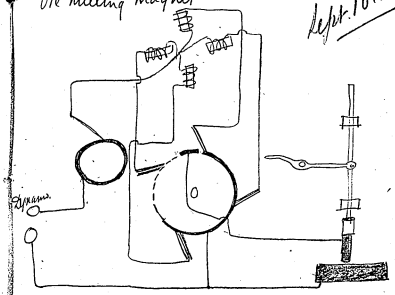
Electric Brake
for Freight Cars Aug 15 1899



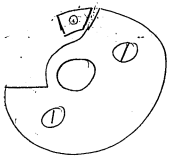

overflow
overflow

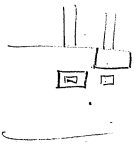
Ore killing magnet

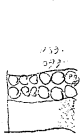
Sept. 10 1899



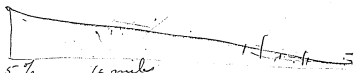
Breaking without spark in commutator







1450 / 500000 | .34⁸
4350
6500
6



5% 4 mile

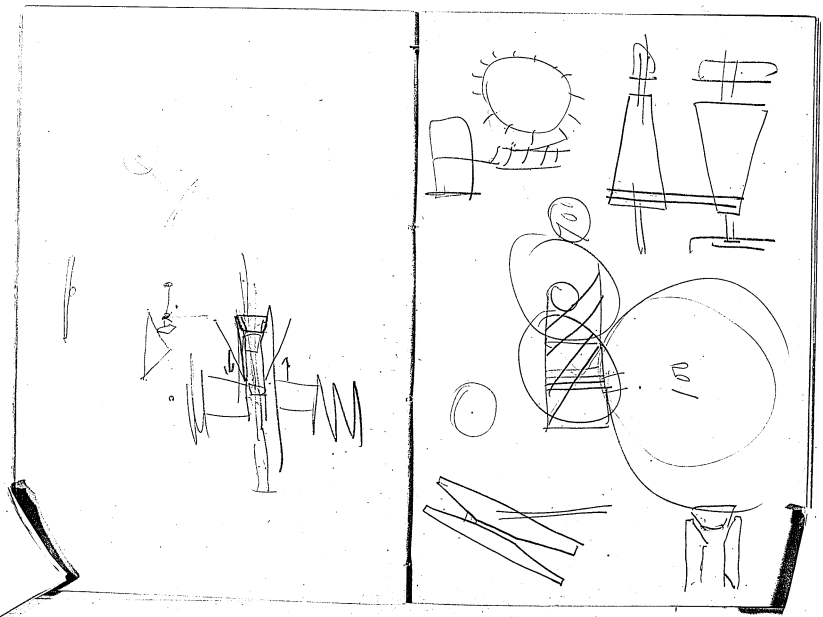
11 X 5280 / 60 2112 / 60 = 3300 feet per min

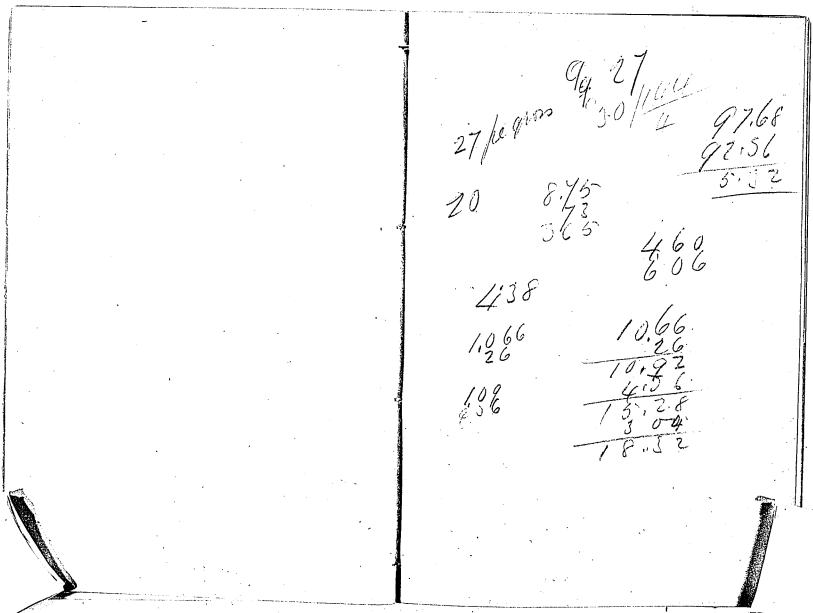
1/20 13200 / 20 = 660 ft

700 - 245000

7

0



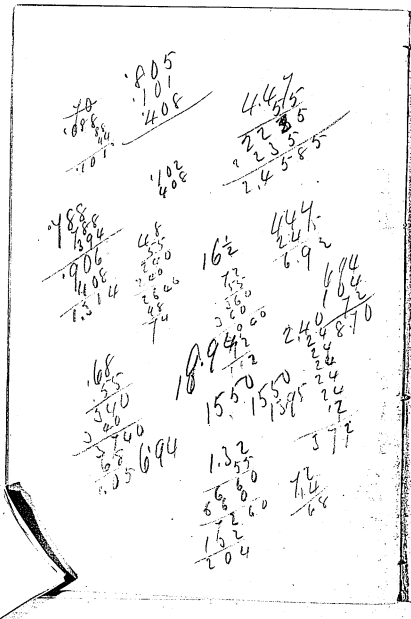

27
27 pieces
20
8.75
438
1.066
26
108
4.38
4.60
6.06
10.66
2.26
10.92
4.56
15.28
3.04
18.32
97.68
92.56
5.12

Sept 20 1879

Walling, Wm Esq —

1 Box Complete		6.43
4 Glass Jars	13¾	.55
4 Covers		.48
8 Cyphers	41¢	3.28
8 Lines	17¢	1.36
8 Soda	9¢	.72
		12.82

1 1/2
2 9



20'

Zinc Complete	4.47	6.94	5.55
Oxide plate 8 Sets	2.40	3.68	2.944
Knees 16½¢	1.32	2.00	1.60
Jaws 17¢	.68	1.04	.832
Covers 12¢	.48	.72	.68
Soda 8 9¢	.72	1.12	.896
	10.07	15.50	12.50
			1.25
			11.25

Call it 15.50

Zinc Complete	8.40
Oxide plate Set 46¢	3.68
8 Knees at 25¢	2.00
8 Soda Stick 14¢	1.12
	15.50

Plus Jaws 26¢
" Covers 18¢

Apr 20

Changes Lunes & 200 hrs Lunes

$13.25

Lunes Capitt Stella	5	1.33	7.48
Bine, Without Oscar pl,	2	1.40	3.92
Lunes		1.32	1.72
Soda.		.72	.96
	10	.07	13.25
		20%	2.65
			10.60

5

see next page

15% 13.25 / 1.99 / 11.26

5% 5/10 / 10.70

Altus Lunes & 200 hrs

Prime cost of Battery Sept 18th 1869 Scotown Jo

Material used Disposal Items Labor Material Total

Battery Box	$	c	$	c	$	c.
4 pcs 4 pcs Birch Board 1½" & thinning 5% used				1437		
1 pair dividers				07		
1 pair Handles				056		
1 pcs screws & nails				028		
2 boards 4 by 6		35				
2 binding Rods				033		
Shellac				096		
Lead lining 8 lbs 6½ loss 20%				050		
Bestolson Pins				491		
3/4 2in Oxidized wire		13		01		
4 wire Punchings				02		
2 Bundles of Rod Iron				014	1	6213
12 Wire Mounts				005		
4 cop jar Handles - Oblate						
4 rubber bands				336		
4 Plastic cords				04		
Riveting Screws & Washing cords				0375		
4 safety strips rubber		06				
Double Zinc Cramps 141 072				014		5735
1 Double Connector				288		
4 Battery Screws 81 10 & 40% loss				04		04
4 Covers allowing 5%				55		
				18		73
Supplies						
Copper Plates		444	$2	752.8	$ 3	1928
8 lbs coals copper 13%						
coudaying 8 lbs coal cost		-	1	00		
Binding woodslaying Labor 8 lbs		06		072		
Pressing plates Labor		04		-		
Annex 8 pcs coal cost		10				
" Labor		-		04	1	372
Forging & Burnishing		02		-		
Opperate Lead & Lye Wire Acid		03				
Zinc Plate				01		
8 pcs Zinc plating 108 wide sludging work						
Cleaning Labor		06		70		
Fuel for 4 pcs coal cost				008		
Oxidizing Dusting Mercury				04		
Amalgamating Labor				04		898
Bringing to Bath 4 lbs & 8 lbs Formerly		02				
Connects Below				04		
				444		444
Royalty on 12 Cells		75	$ 5	0528	$ 5	8038
			1	20	1	20

Battery Box Cutting & material $ 2.752
25% & 688
Labor 111 c inversed 500% 2.20
$ 5.640

Acids Plates material 1.06
25% & 265
Labor 21 c inversed 500% 1.05
$ 2.375

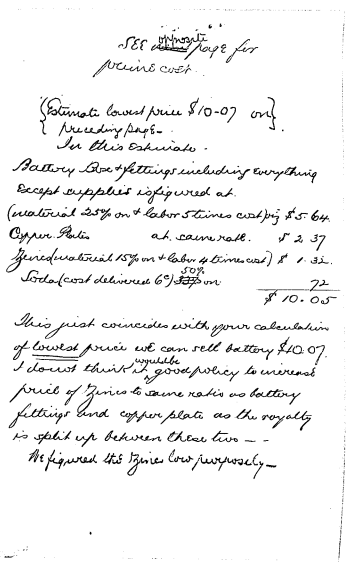
Zincs material 80 c
15% & 12
Labor 15 c inversed 400% 40
$ 1.32

Soda cost delivered 6 c 48
50% 24
.72

Battery Box complete $ 5.64
Acids & plates 2.375
Zincs 1.32
Soda .72
$ 10.055

We figure 30% on these prices to get the $13.25 & take off 15% & 5% to mark price $10.70. leaving margin for us to mark bottom price $13.25 less 20% = 5%. bringing it down to $10.07 for large contract

[ITEM FOUND IN BOOK]



See Wright page for
present cost

(Estimate lowest price $10-07 only
preceding page.
In this estimate.

Battery Box + fittings including everything
except supplies is figured at.
(material 25% on + labor 5 times cost) big $5-64
Copper Plate at same rate. $ 2 37
Zinc (material 15% on + labor 4 times cost) $ 1 32
Soda (cost delivered 6¢) 50% on 72
$ 10. 05

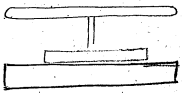
This just coincides with your calculation
of lowest price we can sell battery $10.07
I doubt think it good policy to increase
price of Zinc to same rate as battery
fittings and copper plate as the royalty
is split up between these two —
We figured this Zinc low purposely —

Edison's new System of
Street Car propulsion

A central station delivering
1200 Volts & supplying by underground Conductors
current transformers every feet
along the line — These receive
current at 1000 V. & deliver at
20. — They are placed in iron
boxes under ground & they supply
the current direct to the rails

The motor ~~receives~~ runs in one direction
all the time & receives its current
direct from rails. — It drives a friction
device whereby the car may be made to
go ahead, back, or stand still, without
stopping the armature & has a variable
speed between 2 & 9 miles per hour

As regards the H.P. to drive a car notwithstanding the fact that Sprague puts on a car 2 15 H.P. motors ~~that~~ ~~that~~ we have designed ~~each~~ ~~for~~ car to have a motor of maximum capacity of 7 H.P. which will work at 80 p.c efficiency when at 3½ H.P. & only 50 p.c at ~~max~~ 7 H.P.



94 Gram

60

120
600
660
57
57

Dec 9 1889

4 Transformer

Test with no load

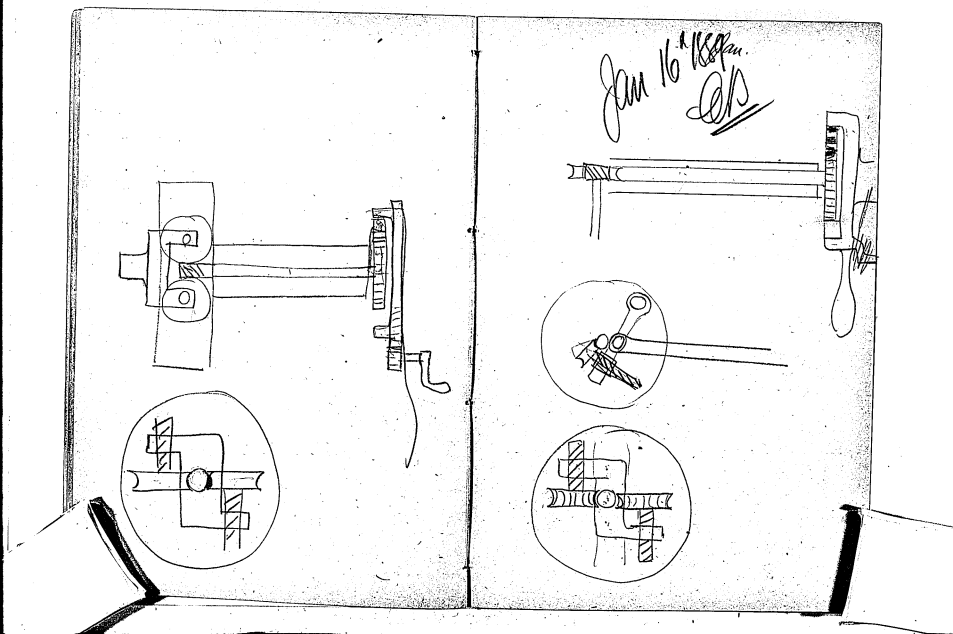
Dynamo { 1200 Volts 16 amps.
1200 Res. Res. 1.8 ohm.

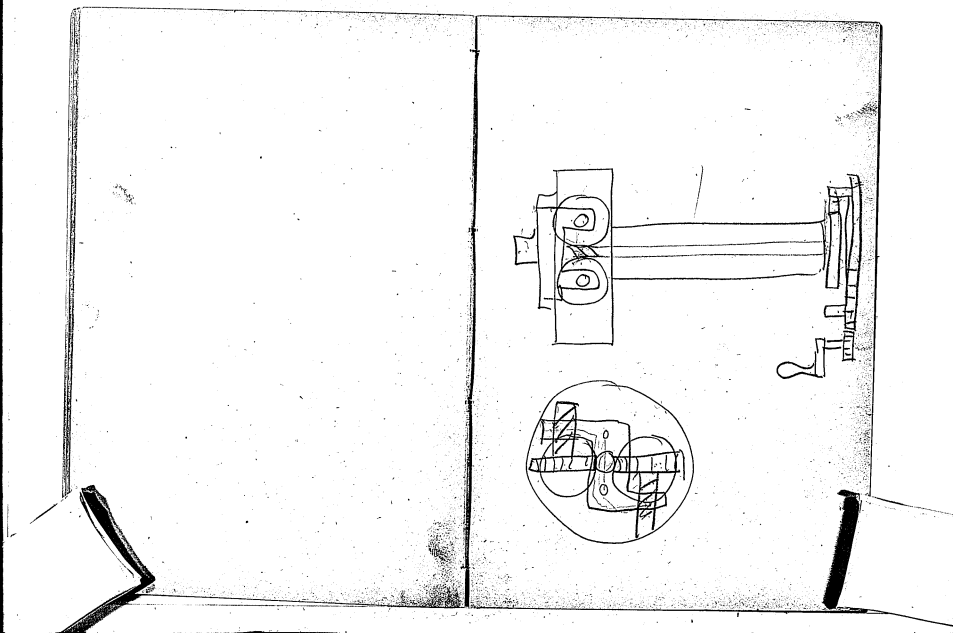
Dynamo tested
#4 machine with base lengthened

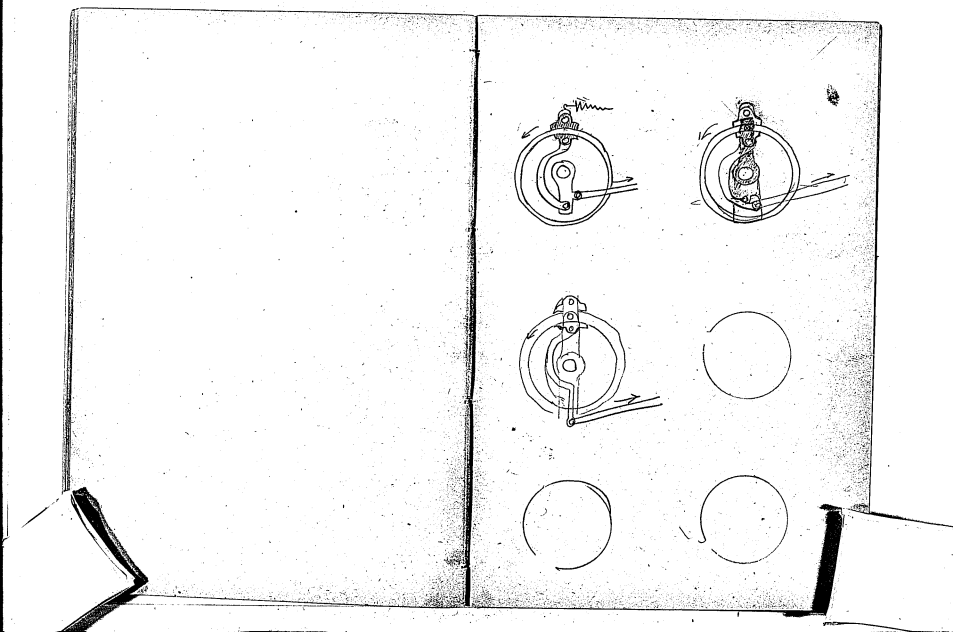
Primary 1100 Volts No load
1900 Res. Res. 5.5 ohm.

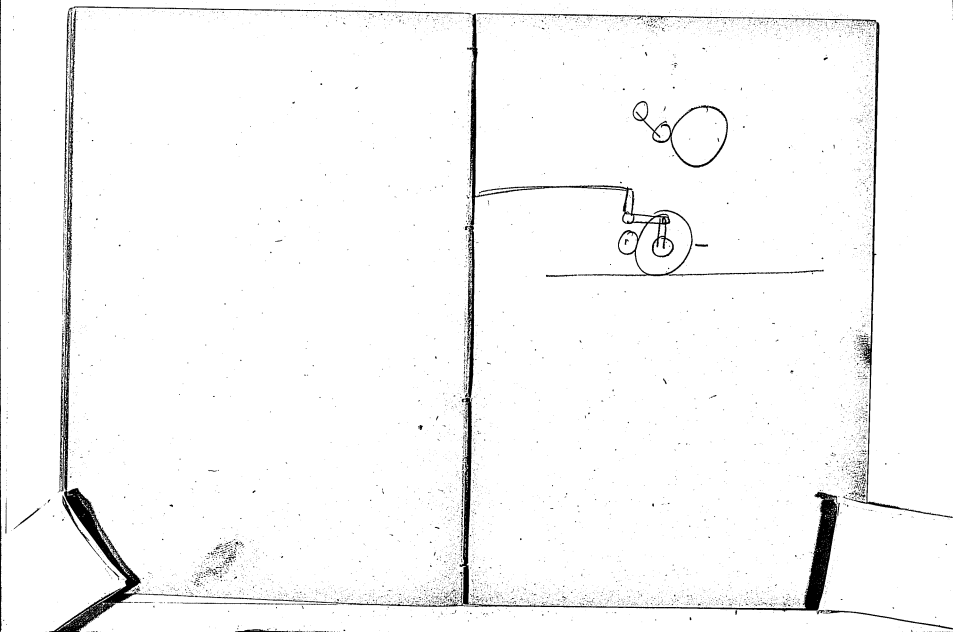
Secondary 21 Volts No load
1900 Res. Res. .001 about.

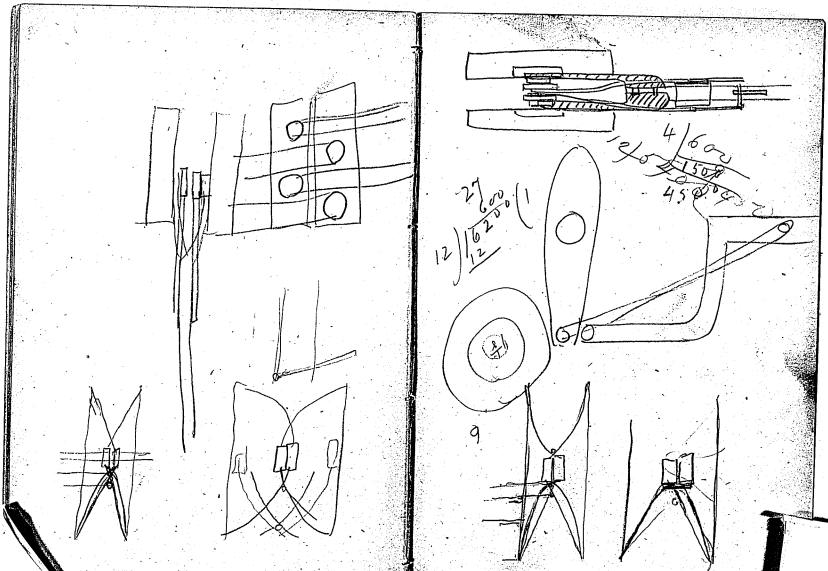
Only current enough to charge field
in secondary — No heating from
Foucault currents.

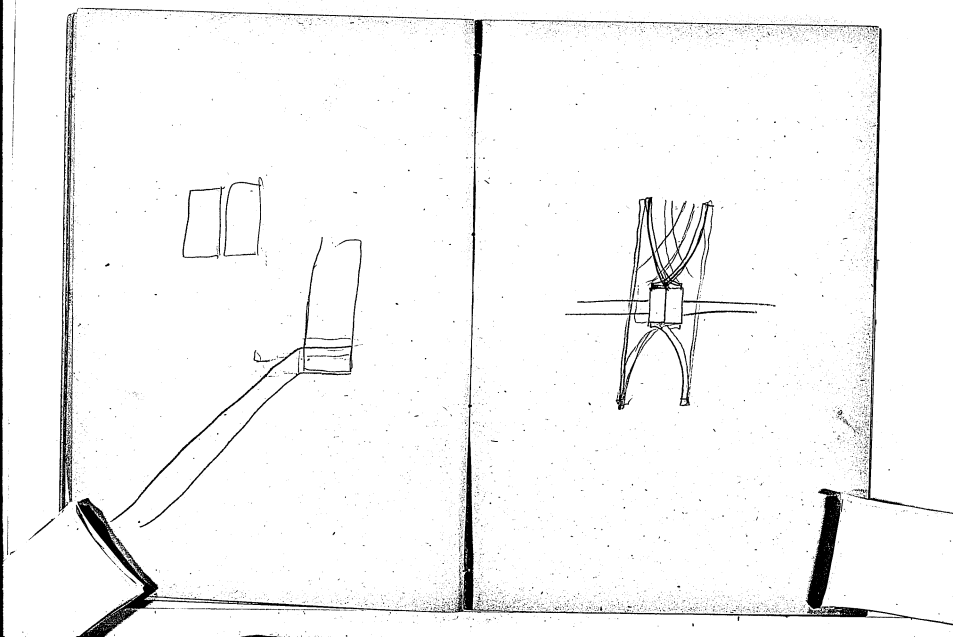

Jan 16 1868

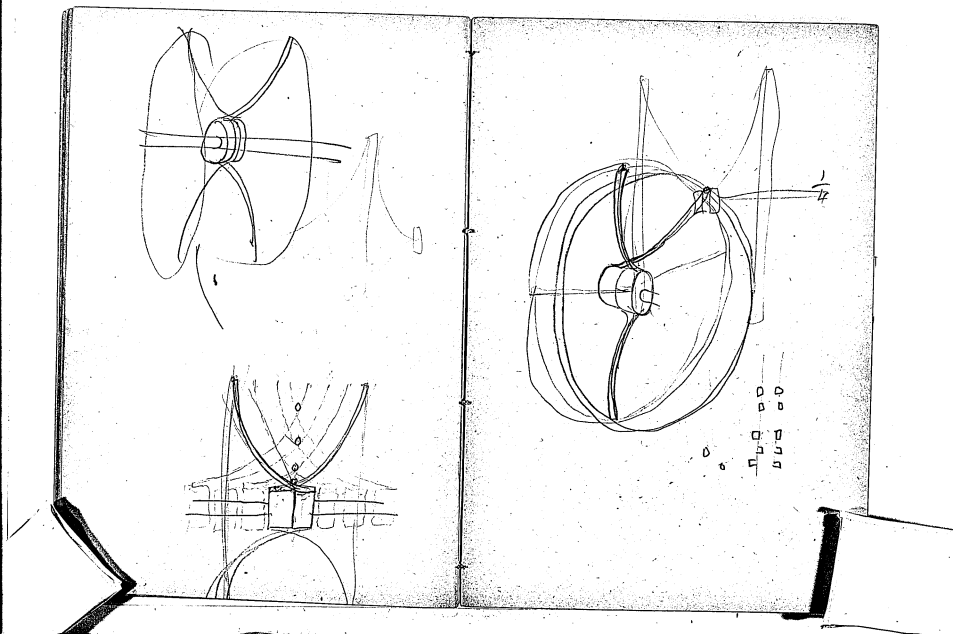


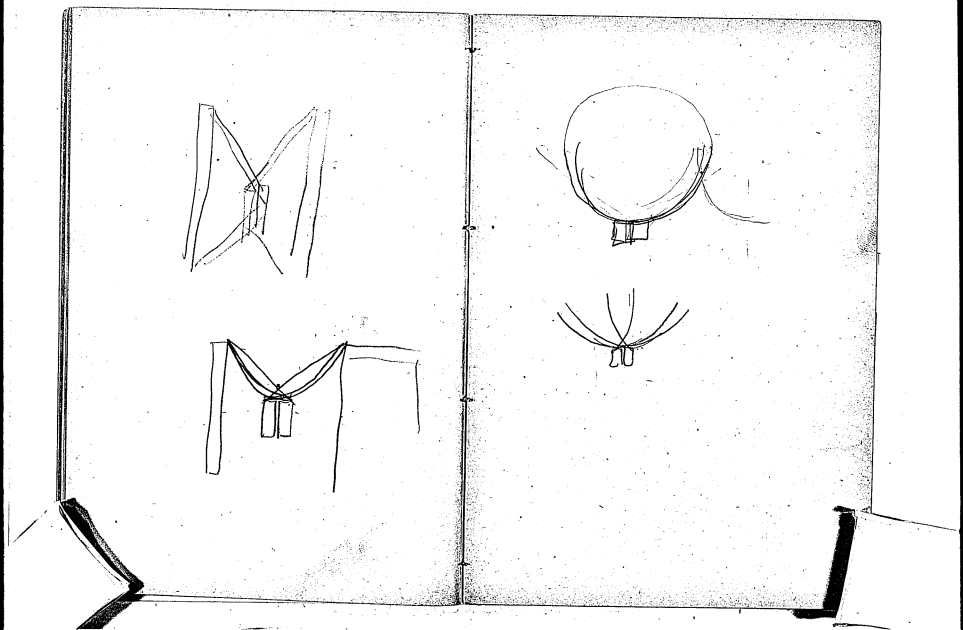


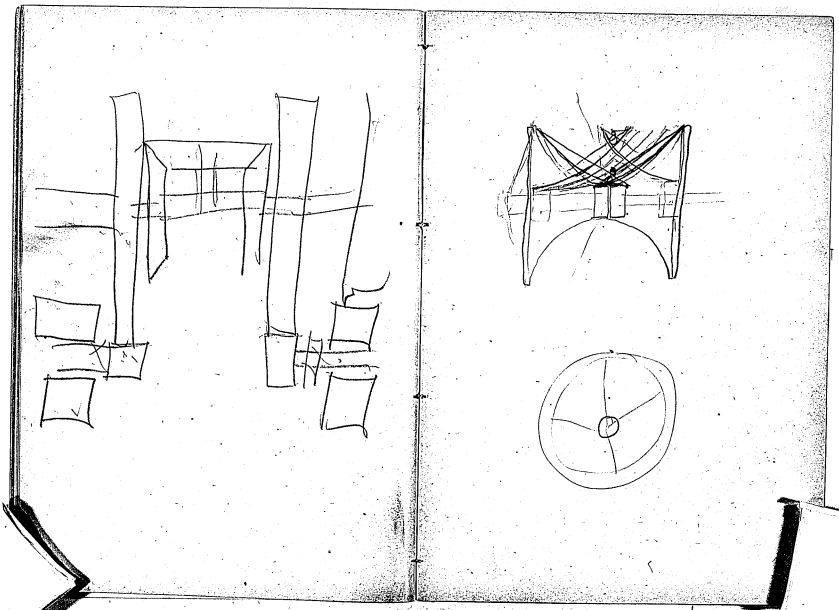


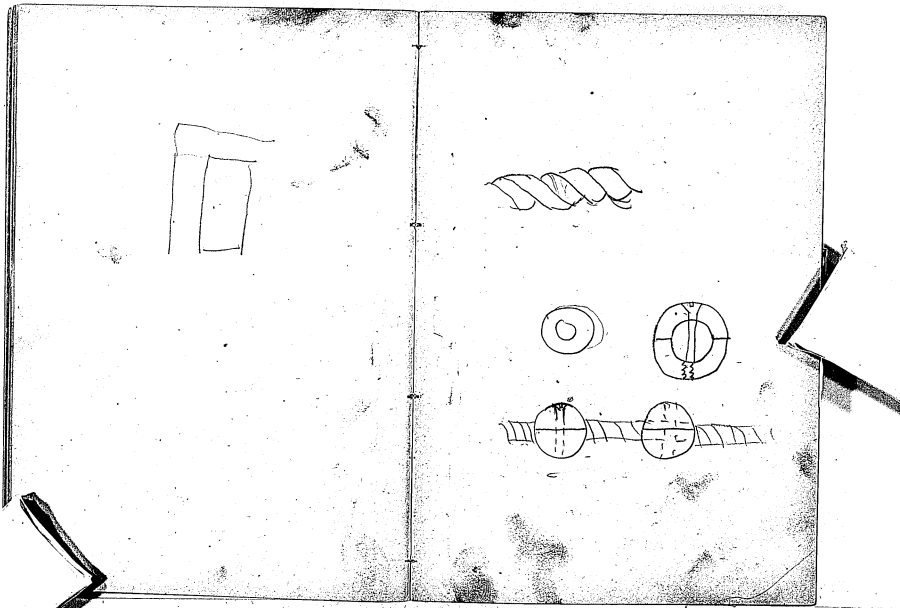

4
12
27
12
9

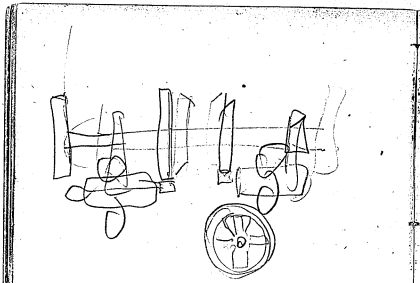


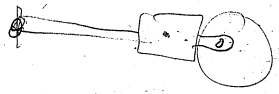












24

240

20

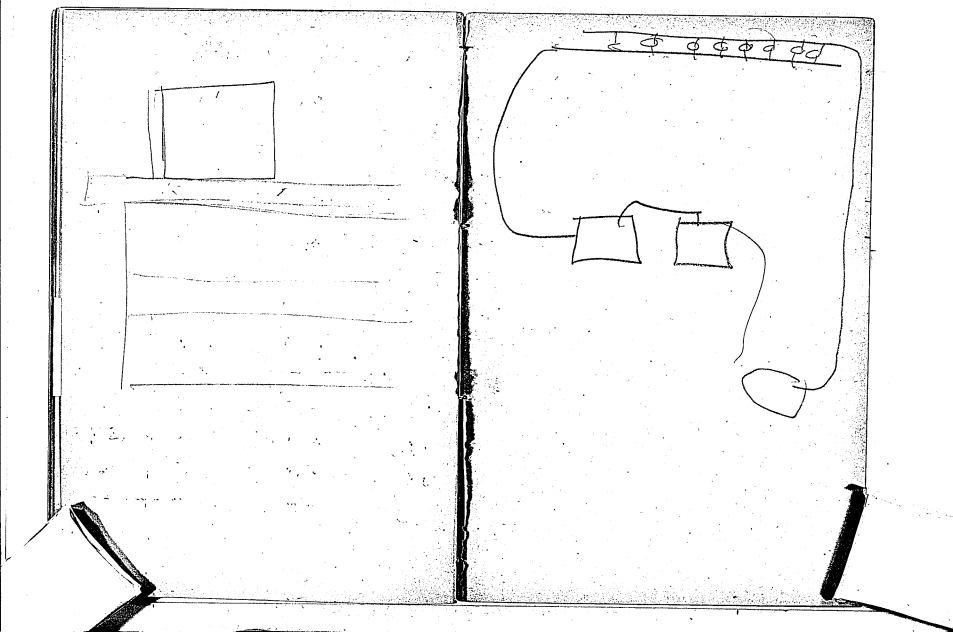
2

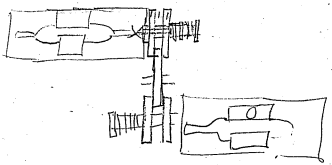
4

5

2000 –

600 –
30
2400 –





6.25 Amperes

8 Amperes

Wearing test of Sprocket & chain for driving strut Rear

Single chain 1/2 the width of chain used on car.

Speed of Motor = 1285 Rev per min

" " of Pull = 1810 ft " "

Pull in " about 100 lbs

Amperes in Motor 35

Volts 120

Started Jan 28 - 4 P.M.

Stopped " " 6 " "

Started " 29 7 A.M.

2 test

Amperes in Storage Motor running chain light - 4.5

Weight - of Prony Brake 66 lb

Sperry Dynamo Feb 20 1891

Speed 1200 Full Load ~~1200~~ per min

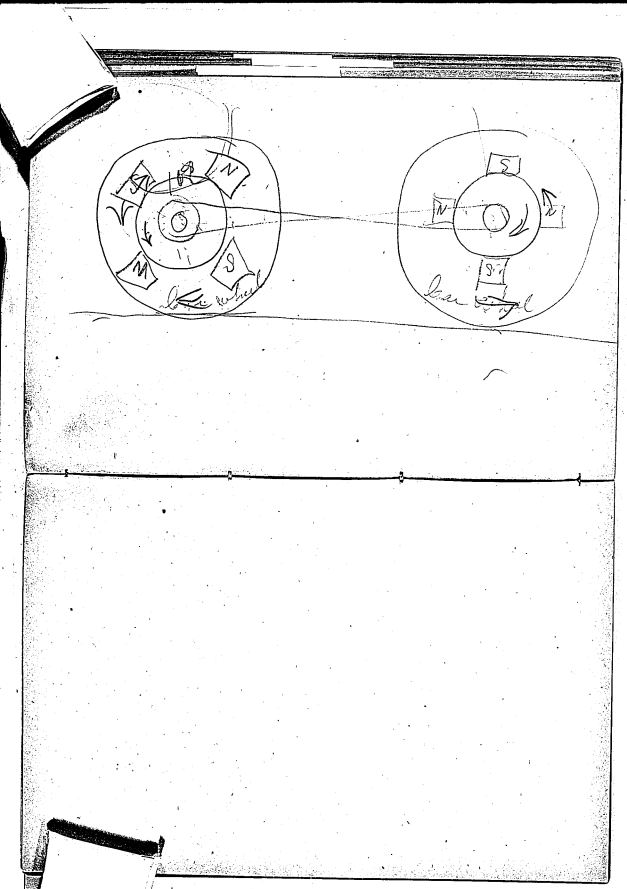
Driven by # 4 Machine

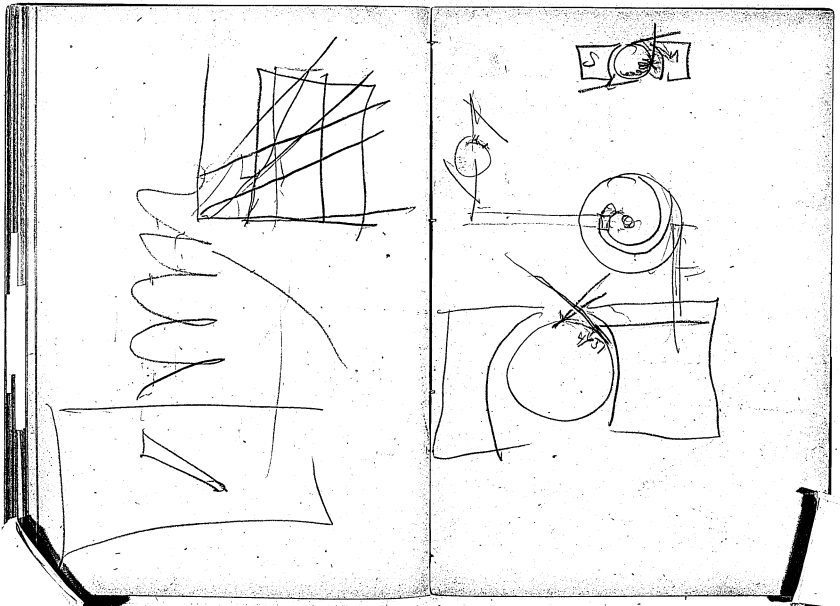
To determine rise and fall of potential by position of brushes.

Current.	Sperry Dynamo Speed.	Volt	Degrees deflection of brushes from Neutral
10 Amps	1200	500	46°
10 "	1200	450	51°
10	1220	400	56
10	1200	350	59°
10	1200	300	62"
10	1200	250	64.0"
10	1200	200	67°
10	1200	150	70°
10	1200	100	73°
5.5	1200	50	50°

Current in Motor about 70 Amperes

Current	Edison # 4 speed	Remarks
		Current in Motor
		70 amperes
		60 amps
		55 amps
		50 "
		48 "
		42 "
		40
		38
		36
		20





Length of Rail Medea
distant from Machine shop
to curve in Phoenix Yard
400 ft
Length of outside rail
of curve 151 ft
from curve to fence 290 ft

33 ties to 100 ft
4 joints in 100 ft
curve radius 40 ft

1342

16,000 | 17,407
9394
6060
5368
6920
6710
2100
1342
7580

7,407
00
223,530

000130

1450 ft of rail

478 lbs

1450 ft of rail with splices and bolts

33 in
14.5

14.0
3.3
43.0
435
47.85

14
0.3
4.2

42
42
4
4

270
61
350
800
760

290
61
301
180

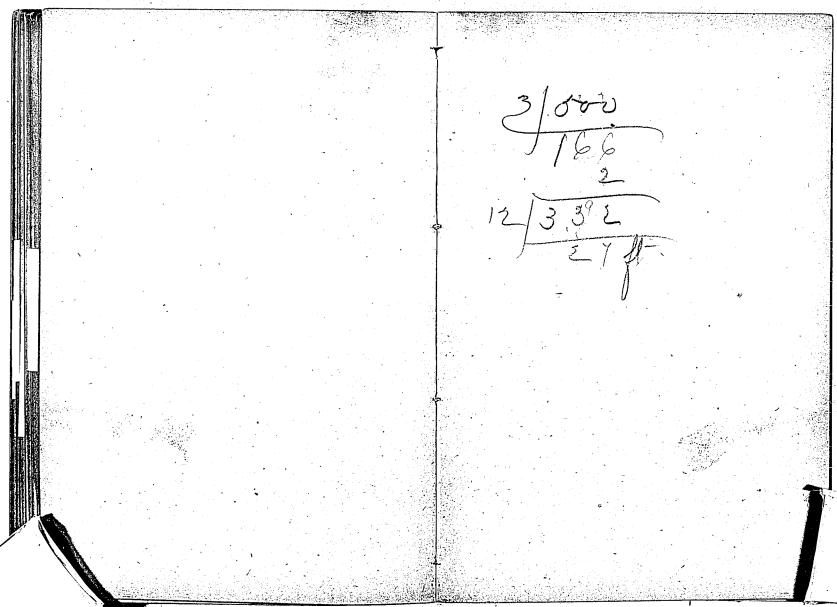
350
400
750

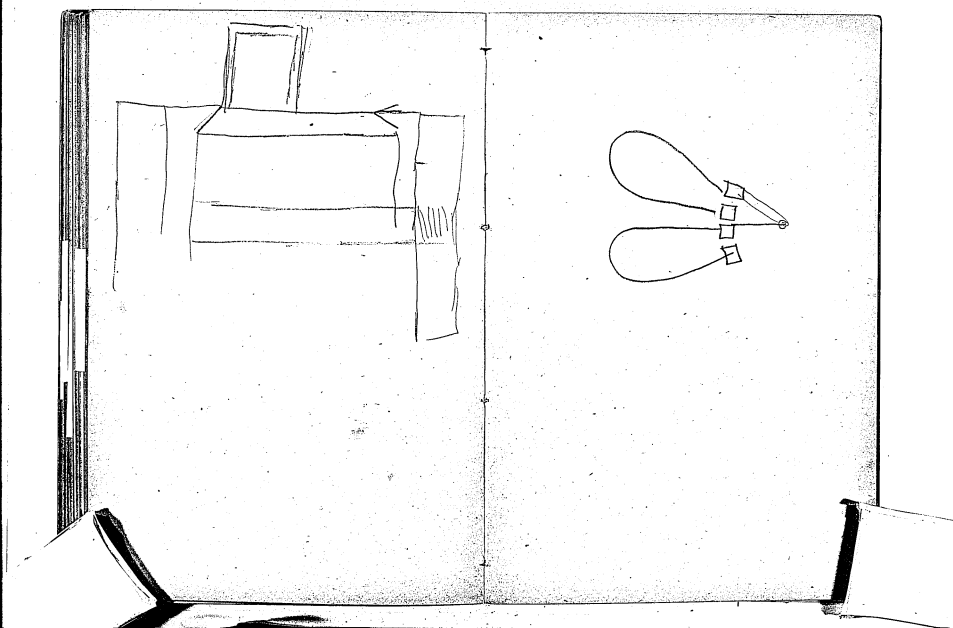
1653
400
1453

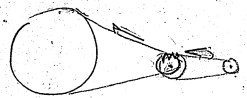
with fish Plates
750 Bolts
700
1450

350
3

33
9
115


3 | 000
166
2
12 | 3 32
2 7





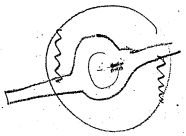
$400 \times 140 = 56{,}000 = 78$

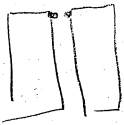
80 HP

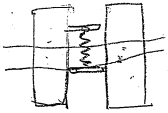
2000 ft

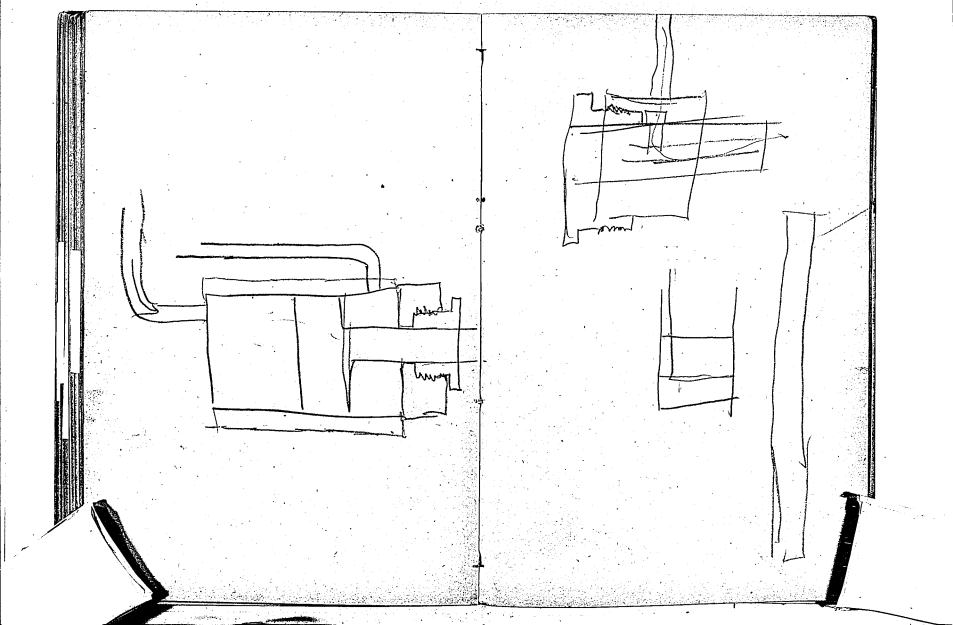
33000

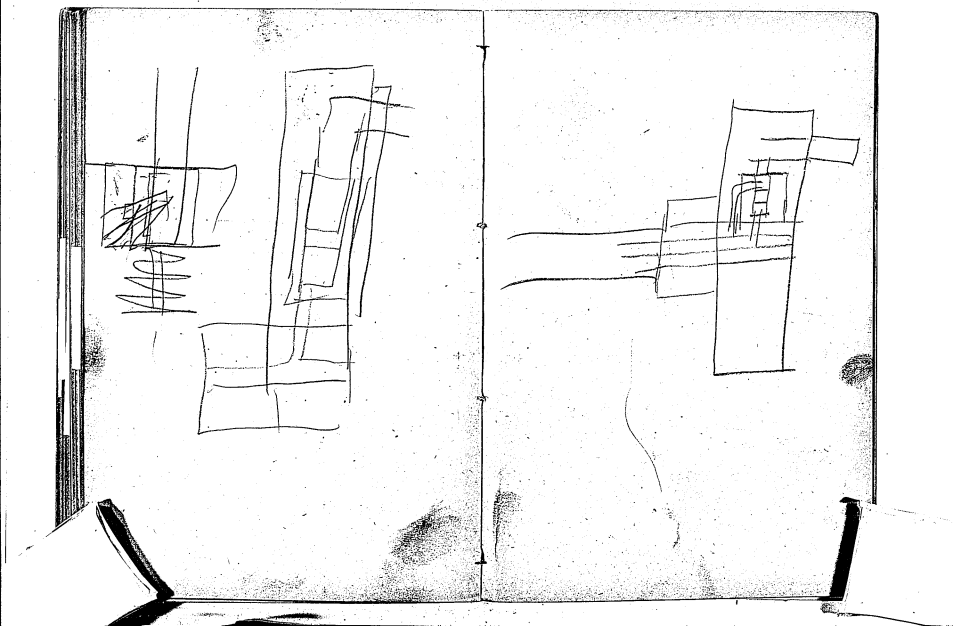
$\frac{80 \times 33}{2} = 1320$

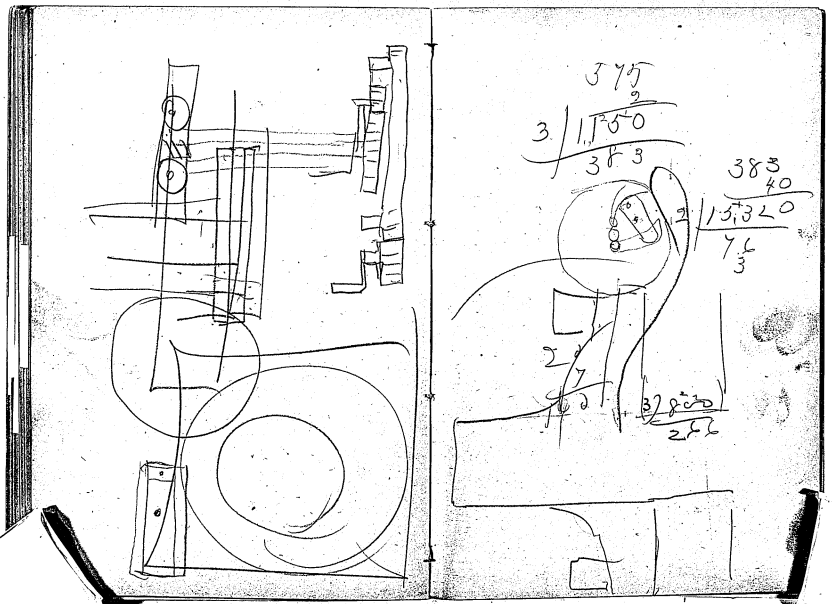
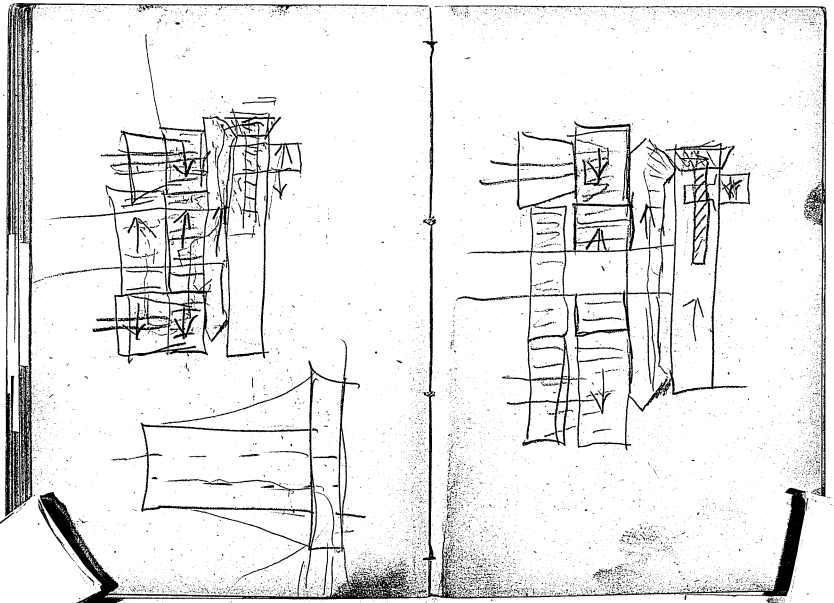
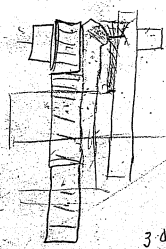











375
3 | 1,150
3
383
40
1,320
7
3